

OPNET/Riverbed Modeler: Specifying User Profiles

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Lecture № 9

- 1 Profile Config
- 2 Specifying user profiles

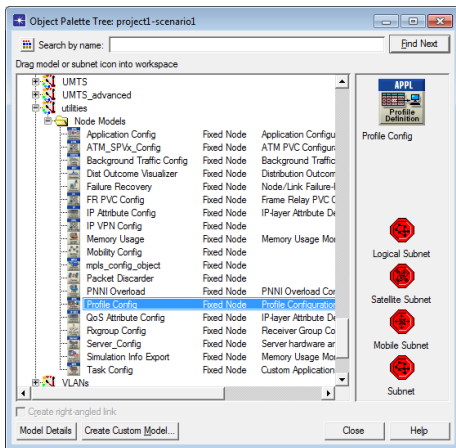
1 Profile Config

2 Specifying user profiles

- **Profile Config** – specify how **standard** and **custom** applications are used by the users during a simulation
 - **Application definitions** – define the characteristics of generated traffic
 - **User profiles** – define how these applications are executed by the users
- User profiles specify:
 - The applications in use
 - The time at which each application is started
 - The run time of each application
 - The frequency of application use
 - etc.
- User profiles should be configured only **after(!)** all the applications employed within the simulation have been defined
 - Because certain attributes of the user profiles are set to the names of the defined applications

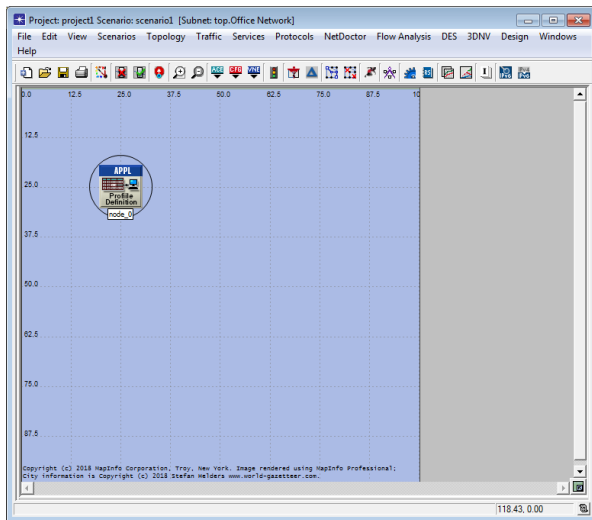
Profile Config (cont'd)

- Open Object Palette ⇒
 - ⇒ Shared Object Palettes ⇒ internet_toolbox ⇒ Node Models
 - ⇒ Shared Object Palettes ⇒ applications ⇒ Node Models
 - ⇒ Shared Object Palettes ⇒ utilities ⇒ Node Models



Profile Config (cont'd)

- A simulated scenario should contain only 1 **Profile Config** object



Profile Config (cont'd)

- By default, Number of Rows = 0
 - I.e., no user profiles configured in the current scenario

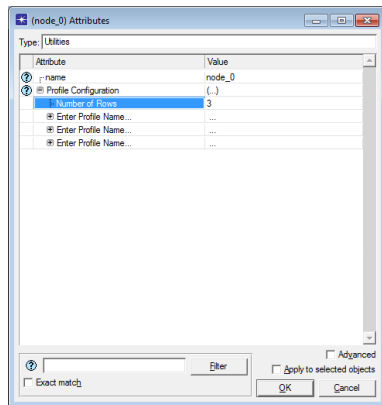
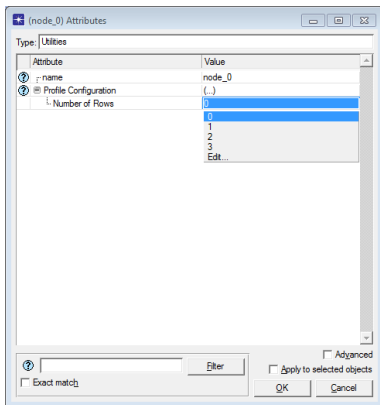
The screenshot shows a software window titled "Project: project1 Scenario: scenario1 [Subnet: top.Office Network]". The main workspace displays a grid with a circular icon labeled "APPL Profile Definition node_0". A dialog box titled "(node_0) Attributes" is open, showing a table of attributes for the "Utilities" type. The table has two columns: "Attribute" and "Value". The "Profile Configuration" attribute is selected, and its value is "(...)", with a sub-entry "Number of Rows" set to "0".

Attribute	Value
- name	node_0
Profile Configuration	(...)
Number of Rows	0

At the bottom of the dialog, there are checkboxes for "Exact match" and "Apply to selected objects", and buttons for "OK" and "Cancel". The status bar at the bottom right of the main window shows "141.84, 68.14".

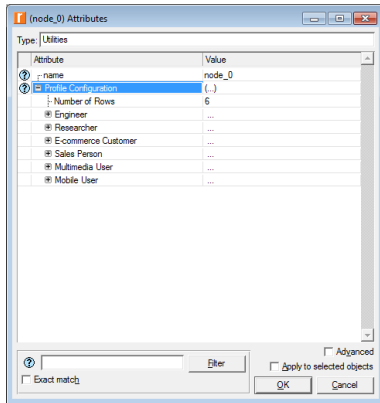
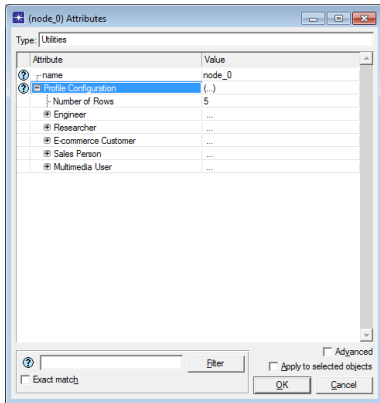
Profile Config (cont'd)

- Number of Rows = N results in N user profile entries



Profile Config (cont'd)

- Profile Configuration ⇒ **Sample Profiles**
- OPNET Modeler 14.5 vs. Riverbed Modeler Academic Edition
 - + Mobile User

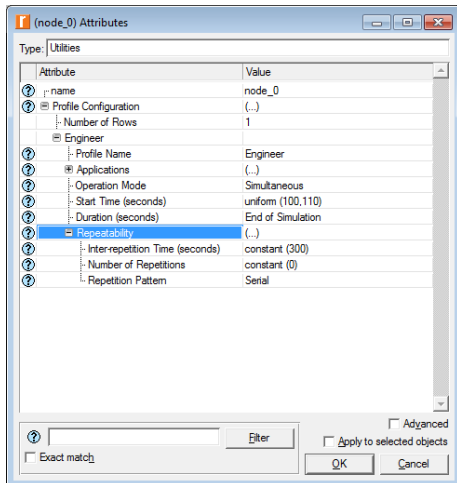


1 Profile Config

2 Specifying user profiles

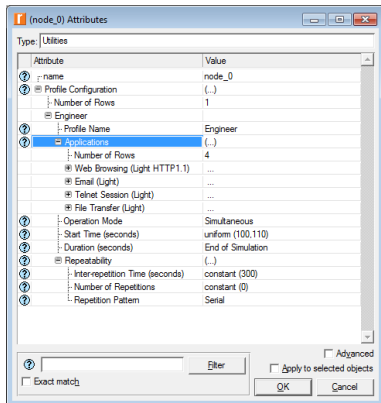
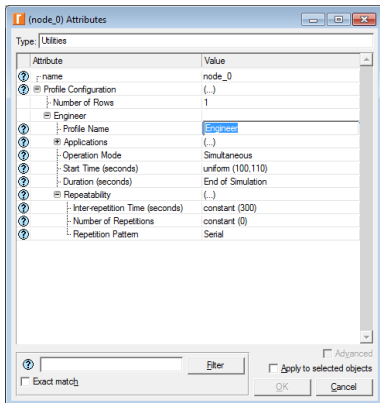
Specifying User Profiles

- Profile Configuration ⇒ Sample Profiles ⇒ **Engineer**



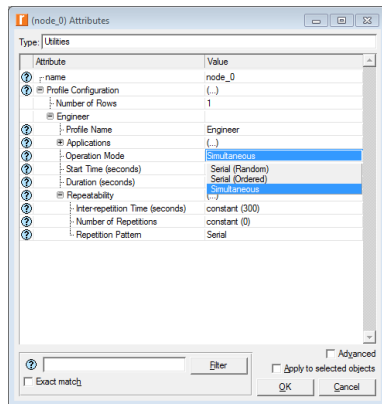
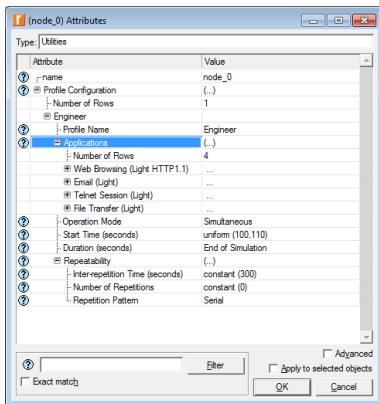
Specifying User Profiles (cont'd)

- **Profile Name** – unique name for this user profile
- **Applications** – applications, which are part of the profile, their timing, repeatability, and sequencing



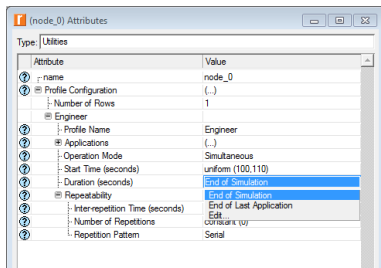
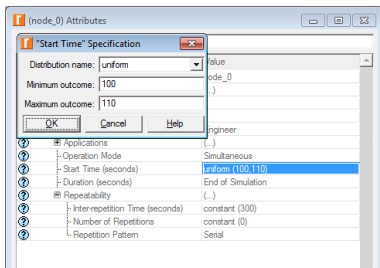
Specifying User Profiles (cont'd)

- **Operation Mode** – how the applications will start
 - Serial (Ordered) – one after another from first to last row
 - Serial (Random) – one after another in a random manner
 - Simultaneous – all at the same time



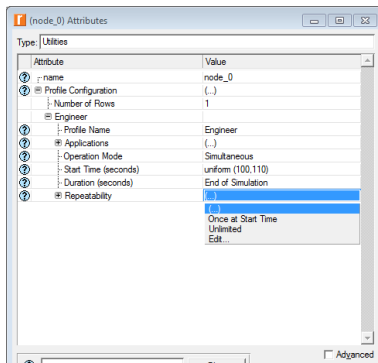
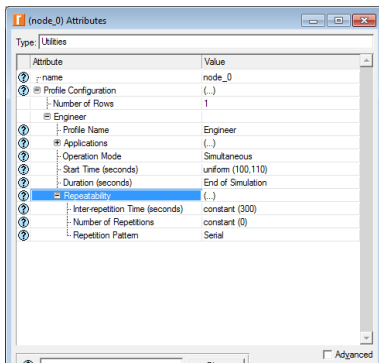
Specifying User Profiles (cont'd)

- **Start Time (seconds)** – when the user profile will start with respect to the simulation start time
- **Duration (seconds)** – how long the user profile will run
 - End of Simulation – allowed to continue indefinitely until the simulation ends
 - End of Last Application – allowed to continue until the last instance of a **custom(!)** application running as part of this profile ends
 - Edit... – set the profile duration manually



Specifying User Profiles (cont'd)

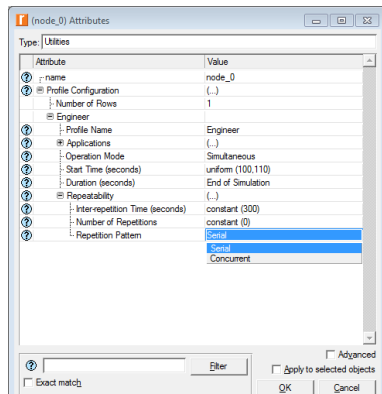
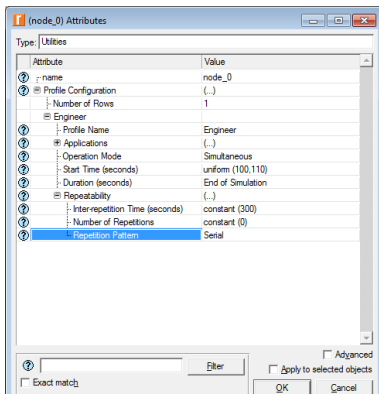
- **Repeatability** – how the user profile will be repeated if it completes before the end of the simulation
 - Inter-repetition Time (seconds) – when the next profile session will start
 - Number of Repetitions – number of times this profile will be repeated
 - Repetition Pattern – how the current profile will be repeated within this simulation



Specifying User Profiles (cont'd)

● Repetition Pattern

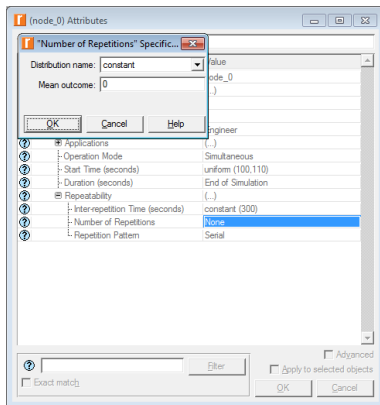
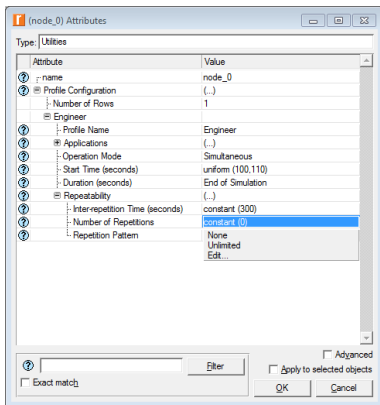
- Serial – next profile session will only start after the previous one has ended
- Concurrent – next profile session can start before the previous one has ended



Specifying User Profiles (cont'd)

- **Number of Repetitions**

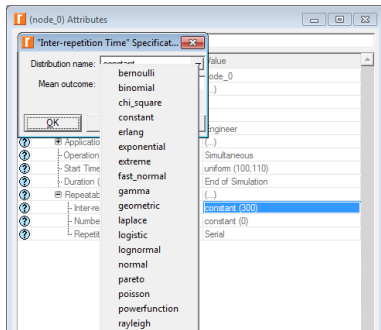
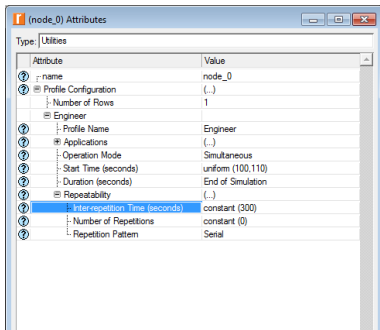
- constant(0) – no repetitions, only 1 profile session
- None = constant(0)



Specifying User Profiles (cont'd)

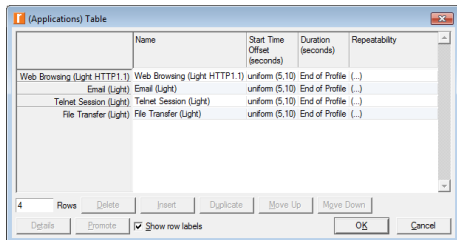
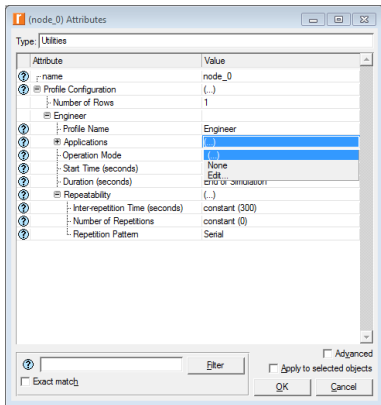
● Inter-repetition Time (seconds) vs. Repetition Pattern

- Serial – start time of the next profile session is computed by adding the inter-repetition time to the time at which the previous profile session completed
- Concurrent – start time of the next profile session is computed by adding the inter-repetition time to the time at which the previous profiles session started



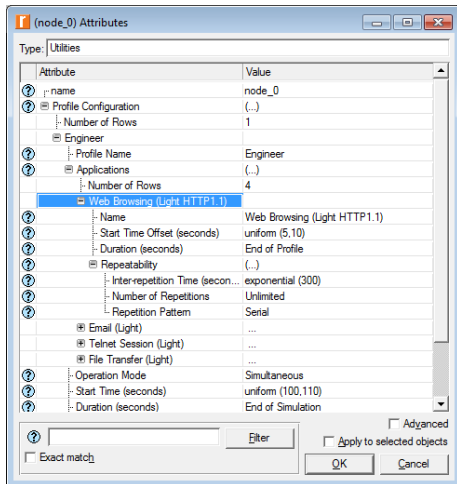
Specifying User Profiles (cont'd)

• Applications



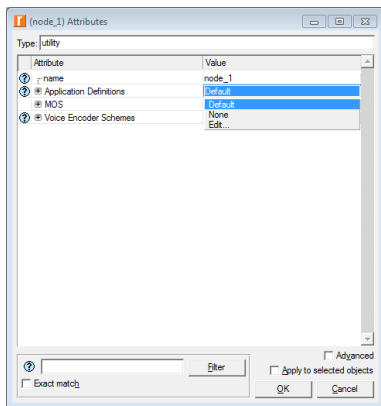
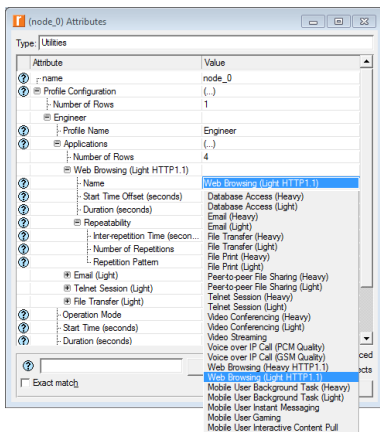
Specifying User Profiles (cont'd)

- Applications ⇒ **Web Browsing (Light HTTP 1.1)**



Specifying User Profiles (cont'd)

- **Name** – name of the application configured in this profile
 - The application should be defined in the **Application Config** object!
 - Application Config ⇒ Application Definitions ⇒ **Default**



Specifying User Profiles (cont'd)

- **Start Time Offset (seconds)**
 - No Offset = constant(0)
 - Never – never starts

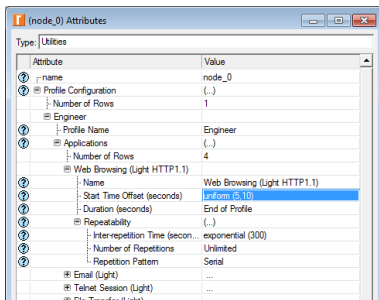
The screenshot shows the 'node_0' Attributes dialog box. The 'Type' is set to 'Utilities'. The 'Start Time Offset (seconds)' field is highlighted in blue and contains the value 'uniform (5,10)'. Other fields include 'Name' (node_0), 'Profile Configuration' (...), 'Number of Rows' (1), 'Engineer' (Engineer), 'Profile Name' (Engineer), 'Applications' (...), 'Number of Rows' (4), 'Web Browsing (Light HTTP1.1)' (Name: Web Browsing (Light HTTP1.1), Start Time Offset (seconds): uniform (5,10), Duration (seconds): No Offset, Repeatability: Never, Inter-repetition Time (seconds): exponential (300), Number of Repetitions: Unlimited, Repetition Pattern: Serial), 'Email (Light)', 'Telnet Session (Light)', 'File Transfer (Light)', 'Operation Mode' (Simultaneous), 'Start Time (seconds)' (uniform (100,110)), and 'Duration (seconds)' (End of Simulation). The 'Advanced' checkbox is checked, and the 'Exact match' checkbox is unchecked.

The screenshot shows the 'node_0' Attributes dialog box with the 'Start Time Offset (seconds)' field highlighted in blue and containing the value 'No Offset'. A 'Start Time Offset' Specification dialog box is overlaid on top. The 'Distribution name' is set to 'constant' and the 'Mean outcome' is set to '0'. The 'OK', 'Cancel', and 'Help' buttons are visible. The background dialog box shows the same configuration as the previous screenshot, but with 'No Offset' selected for the 'Start Time Offset (seconds)' field.

Specifying User Profiles (cont'd)

● Start Time Offset (seconds) vs. Operation Mode

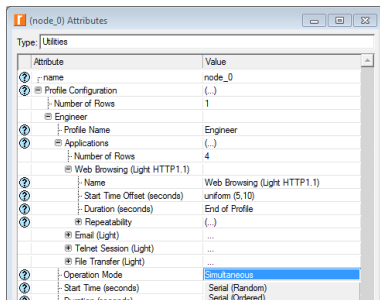
- Simultaneous – time of the first instance of each application in the profile from the start of the profile
- Serial (Ordered or Random) – time from the start of the profile to the start of the first application
- Serial (Ordered or Random) – also serves as the inter-application time between the end of one application to the start of the next; if an application doesn't end, subsequent applications won't start



(node_0) Attributes

Type: Utilities

Attribute	Value
name	node_0
Profile Configuration	(...)
Number of Rows	1
Engineer	
Profile Name	Engineer
Applications	(...)
Number of Rows	4
Web Browsing (Light HTTP1.1)	
Name	Web Browsing (Light HTTP1.1)
Start Time Offset (seconds)	Uniform (5,10)
Duration (seconds)	End of Profile
Repeatability	(...)
Inter-repetition Time (seconds)	exponential (300)
Number of Repetitions	Unlimited
Repetition Pattern	Serial
Email (Light)	...
Teletext Session (Light)	...
File Transfer (Light)	...



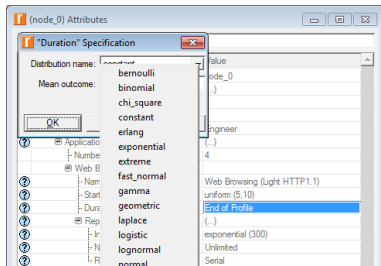
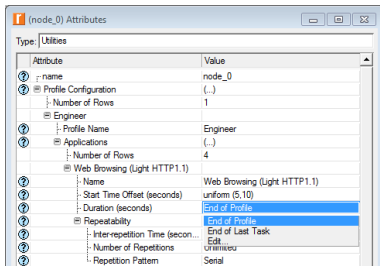
(node_0) Attributes

Type: Utilities

Attribute	Value
name	node_0
Profile Configuration	(...)
Number of Rows	1
Engineer	
Profile Name	Engineer
Applications	(...)
Number of Rows	4
Web Browsing (Light HTTP1.1)	
Name	Web Browsing (Light HTTP1.1)
Start Time Offset (seconds)	uniform (5,10)
Duration (seconds)	End of Profile
Repeatability	(...)
Email (Light)	...
Teletext Session (Light)	...
File Transfer (Light)	...
Operation Mode	Simultaneous
Start Time (seconds)	Serial (Random)
Duration (seconds)	Serial (Ordered)

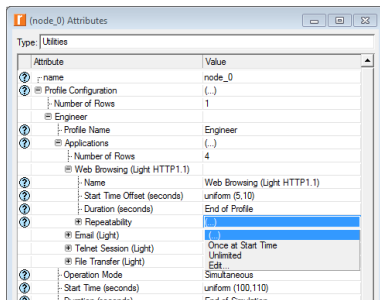
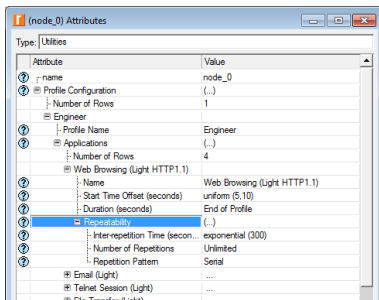
Specifying User Profiles (cont'd)

- **Duration** – duration for which a single instance of this application will execute
 - End of Profile – application will terminate at the same time as this profile
 - End of Last Task – **custom(!)** application will terminate only after its last task is completed; if the last application task completes after the end of the profile, then the application will terminate at the same time as the profile
 - Edit... – set the application duration manually



Specifying User Profiles (cont'd)

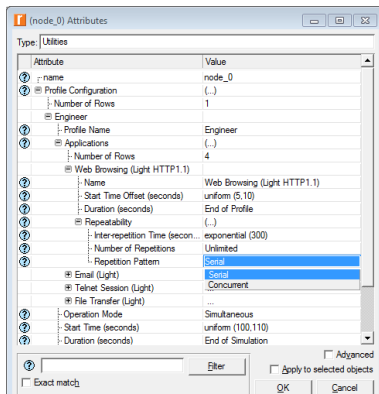
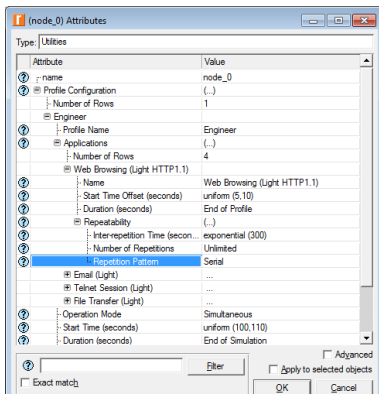
- **Repeatability** – how the application will be repeated if it completes before the end of the profile
 - Inter-repetition Time (seconds) – when the next application session will start
 - Number of Repetitions – number of times this application will be repeated
 - Repetition Pattern – how the current application will be repeated within this profile



Specifying User Profiles (cont'd)

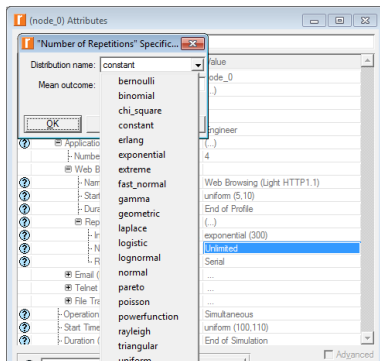
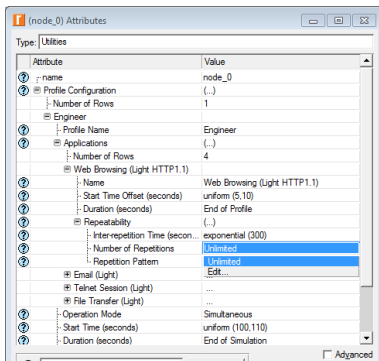
● Repetition Pattern

- Serial – next application session will only start after the previous one has ended
- Concurrent – next application session can start before the previous one has ended



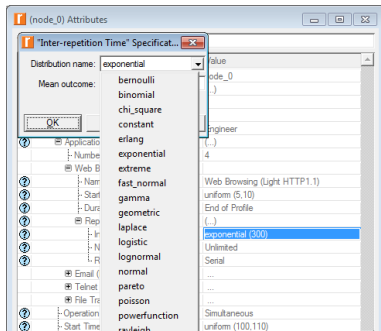
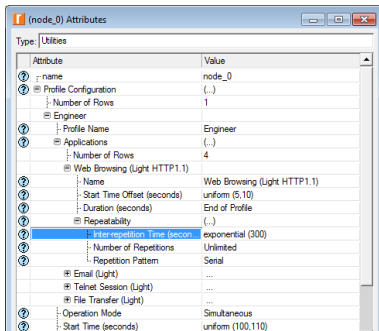
Specifying User Profiles (cont'd)

- **Number of Repetitions** – number of times this application will be repeated
 - constant(1) – during the lifetime of the profile, at most 2 applications sessions would be executed
 - I.e., it is possible that only 1 session will execute if the first session does not complete before the end of the profile



Specifying User Profiles (cont'd)

- **Inter-repetition Time (seconds) vs. Repetition Pattern**
 - Serial – start time of the next application session is computed by adding the inter-repetition time to the time at which the previous application session completed
 - Concurrent – start time of the next application session is computed by adding the inter-repetition time to the time at which the previous application session started



Specifying User Profiles (cont'd)

The screenshot shows a dialog box titled "(node_0) Attributes" with a "Utilities" tab. It contains a table of attributes and their values, organized in a tree structure. The attributes are grouped into categories: Web Browsing (Light HTTP1.1), Email (Light), Telnet Session (Light), and File Transfer (Light). Each category has sub-attributes like Name, Start Time Offset (seconds), Duration (seconds), Repeatability, and Inter-repetition Time (seconds). The values are specified for each attribute, such as "uniform (5,10)" for Start Time Offset and "exponential (300)" for Inter-repetition Time. At the bottom, there is a search filter, an "Exact match" checkbox, and buttons for "OK" and "Cancel".

Attribute	Value
Web Browsing (Light HTTP1.1)	-
Name	Web Browsing (Light HTTP1.1)
Start Time Offset (seconds)	uniform (5,10)
Duration (seconds)	End of Profile
Repeatability	(.)
Inter-repetition Time (seconds)	exponential (300)
Number of Repetitions	Unlimited
Repetition Pattern	Serial
Email (Light)	
Name	Email (Light)
Start Time Offset (seconds)	uniform (5,10)
Duration (seconds)	End of Profile
Repeatability	(.)
Inter-repetition Time (seconds)	exponential (300)
Number of Repetitions	Unlimited
Repetition Pattern	Serial
Telnet Session (Light)	
Name	Telnet Session (Light)
Start Time Offset (seconds)	uniform (5,10)
Duration (seconds)	End of Profile
Repeatability	(.)
Inter-repetition Time (seconds)	exponential (300)
Number of Repetitions	Unlimited
Repetition Pattern	Serial
File Transfer (Light)	
Name	File Transfer (Light)
Start Time Offset (seconds)	uniform (5,10)
Duration (seconds)	End of Profile
Repeatability	(.)
Inter-repetition Time (seconds)	exponential (300)
Number of Repetitions	Unlimited
Repetition Pattern	Serial
Operation Mode	Simultaneous
Start Time (seconds)	uniform (100,110)
Duration (seconds)	End of Simulation
Repeatability	Once at Start Time